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A Measure of the Amount of Chance in True-False Tests

E. O. Finkenbinder
Iowa State Teachers College

or determining proficiency of students when given scaled questions. Results obtained by members of the English Department of Iowa State College in the process of designing a progress test are used as an example. The students were divided into high and low groups on the basis of scores received previously on the Iowa State College aptitude test, on a theme and on the Iowa State College English Department placement test. Three sources of variability are tested, namely: form, time and students. Complete details of the method are presented using the English Department data.

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A MEASURE OF THE AMOUNT OF CHANCE IN TRUE-FALSE TESTS

E. O. FINKENBINDER

When students were informed of the number of errors they had made on a 30-point true-false test and given their answer sheets on which they crossed out and changed the answers they thought might be the ones in error, they could not significantly raise their scores (corrected for chance) when the number of true and false statements were approximately equal. If the number of true statements were greatly in excess of the false statements, say two true to one false, they lowered the score by their changes. On the other hand, if the false statements greatly outnumbered the true ones, then they raised their scores by their changes, no doubt due to the fact that they tended to equalize the number of true and false answers.

There is a strong tendency to think more statements are true than really are true. When the test contained an equal number of true and false statements, 60% of the answers were true, 40% false. This bias, producing $\frac{1}{2}$ more answers "true" than "false," means that there will be more errors made in answers to false statements than to true ones.

A sample of the data is given below in which 18 statements are true and 12 false, answered by 28 students in psychology.

43 True statements wrongly answered not changed out of 88 such wrong answers.

69 False statements wrongly answered not changed out of 119 such wrong answers.

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112 Incorrect answers not changed.

Same number *correct answers but were changed to incorrect.*

49 True statements wrongly answered but changed to correct out of 88.

50 False statements wrongly answered but changed to correct out of 119.

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99 Incorrect answers changed to correct.

293 True statements correctly answered left unchanged.

223 False statements correctly answered left unchanged.

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516 Correct answers.

Note that they made just as many changes that they should not have made as they left unchanged of their wrong answers that they should have changed. And they made fewer correct changes (99) than incorrect ones (112). This lowered their scores.

If we wish students to make higher scores than they should according to what they know, we should provide an excess of true statements. If they are given a test in which false statements predominate, their scores will be lower than they should be.

Department of Psychology,
Iowa State Teachers College,
Cedar Falls, Iowa.

A STATISTICAL STUDY OF ATTITUDES

A. R. Lauer

An attitude test covering seven major attitudes, established on a priori grounds, was given to 165 adult male subjects in industrial plants. Included are attitudes toward traffic regulations and enforcement; risk and annoyance; socialistic, communistic and conventional principles; racial and religious attitudes; conformist attitudes; and those relating to sports. The reliabilities of the attitude groupings range from .86 down to .55. Intercorrelations of these items indicate grouping into a smaller number of factors. A comparison is made between accident and non-accident drivers on significant attitudes.

Department of Psychology,
Iowa State College,
Ames, Iowa.